

SONY

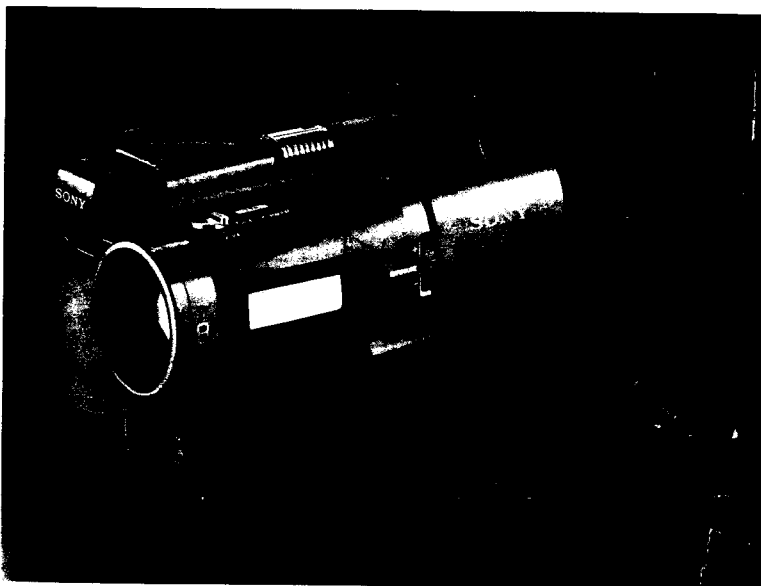
3-755-419-21 (1)

Video Camera Recorder **Hi8**

CCD-TR200

Operation Manual

Before operating the unit, please read this manual thoroughly and retain it for future reference.



video Hi8 Handycam

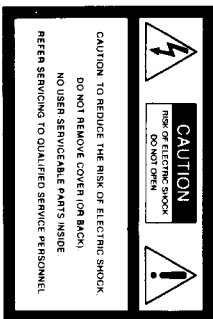
© 1982 by Sony Corporation

Welcome to Video Hi8

Congratulations on your purchase of this Sony Handycam[®] Camcorder. With your Handycam, you can capture life's precious moments with superior picture and sound quality. Your Handycam is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Owner's Record

The model and serial numbers are located on the bottom of the camcorder. Record the serial number in the space provided on the right hand. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. CCD-TR200

Serial No. _____

INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.

For the customer in Canada

The apparatus complies with Class B limits for radio noise emissions set out in Radio Interference Regulations.

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Before You Begin

About This Manual

If you want to shoot as soon as possible read the chapters "Getting Started" and "Basic Operations" first. As you read through this manual, buttons and settings on the camcorder are shown in capital letters. e.g. Set the POWER switch to CAMERA.

Note on TV Color Systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system based TV or a PAL-M system based TV with NTSC/PAL-M transcoder (as this is an NTSC system based camcorder). Please check the list on page 44 to see the TV color system of your country.

Note on the Supplied RFU adaptor

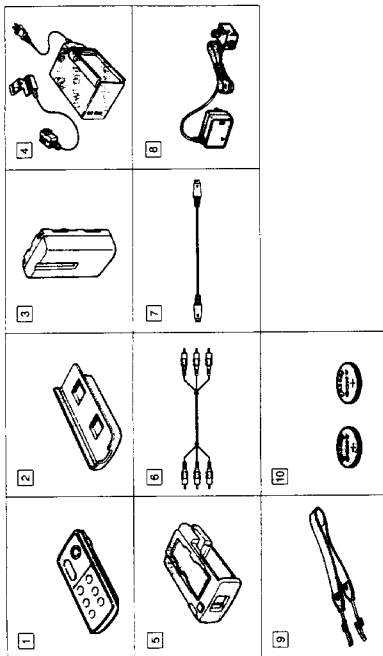
You can use the supplied RFU adaptor only in the country where you bought this camcorder. Since each country has its own electricity and TV color system, you may not be able to use the RFU adaptor when you use the camcorder abroad.

Precaution on Copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.



- 1 Wireless Remote Commander (1) (p.48)
- 2 Remote Commander Holder (1) (p.49)
- 3 NP-500 Battery Pack (1) (p.6)
- 4 AC-V500 AC power adaptor (1) (p.6, 24)
- 5 HSA-V500 Handycam Station (1) (p.6, 20)
- 6 A/V connecting cable (1) (p.21; 37)
- 7 S video connecting cable (1) (p.21, 37)
- 8 RFU-90UC RFU adaptor (1) (p.21)
- 9 Shoulder strap (1) (p.49)
- 10 CR2025 Lithium Battery (2) (p.11)

These are already inserted in the camcorder and the Remote Commander.

Getting Started

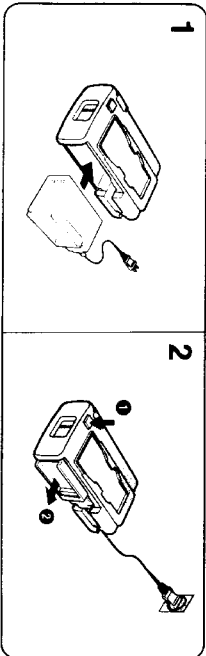
Charging and Installing the NP-500 Battery Pack

Before using your camcorder, you first need to charge and insert the supplied NP-500 battery pack. The supplied battery pack has been slightly charged when you receive the camcorder, with or without the supplied HSA-V500 Handycam Station. You can charge the battery pack by using the supplied AC-V500 AC power adaptor, press ADAPTOR RELEASE and pull out the AC power adaptor. This is convenient for taking the AC power adaptor on a trip.

- Charge it by directly attaching it to the AC power adaptor (p. 6).
- Charge it by inserting it into the camcorder (p. 9).
- Charge the two battery packs consecutively (p. 10).

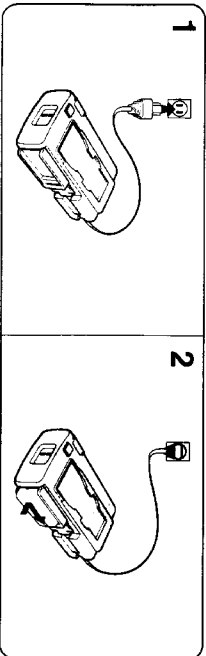
Note on the Handycam Station

You can connect your camcorder and TV or VCR more easily by using the supplied HSA-V500 Handycam Station (p. 18). You can use the Handycam Station attached the AC power adaptor. You can also use the AC power adaptor separately. When you remove the AC power adaptor, press ADAPTOR RELEASE and pull out the AC power adaptor. This is convenient for taking the AC power adaptor on a trip.



Charging with the AC Power Adaptor

You can charge the battery pack quickly. (1) Connect the AC power adaptor to a wall outlet. (2) Align the surface of the battery pack indicated by the ► mark with the edge of the terminal shutter of the AC power adaptor. Then, insert the battery pack along the guides. The orange CHARGE lamps flash or light and charging begins. When the orange CHARGE lamps stop flashing, the three CHARGE lamps light. (They go out after about 1 hour.) Detach the battery pack and insert it into your camcorder (p. 9). You can also use the battery pack before it is completely charged. Three CHARGE lamps show the battery life. For charging time and battery life, refer to the table below.



You can also charge the battery pack by using the AC power adaptor without the Handycam Station.

Charging time and battery life

Status of CHARGE lamps	Charging time*	Battery life**
CHARGE lamps flash	Start	—
CHARGE lamps flash	30 minutes	30 minutes
CHARGE lamps light	50 minutes	40 minutes
CHARGE lamps light	1 hour 30 minutes	50 minutes

* Approximate charging time to charge an empty battery pack using the AC-V500. (Lower temperatures require a longer charging time.)

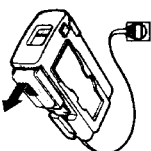
** Approximate continuous recording time indoors

When the three CHARGE lamps flash simultaneously

A problem may have occurred. For details, refer to the instruction manual of the AC power adaptor.

Detaching the Battery Pack

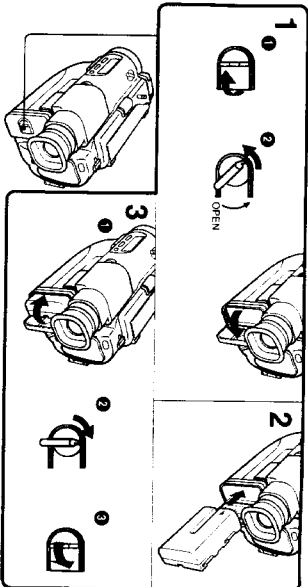
Slide the battery pack in the direction of the arrow.



Charging and Installing the NP-600 Battery Pack

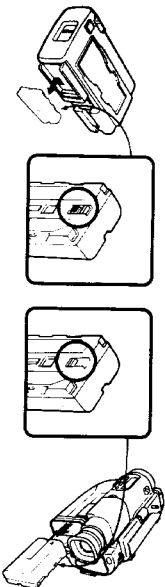
Inserting the Battery Pack into the Camcorder

(1) Turn the knob on the lid of the battery compartment. Open the lid. (2) Insert the battery pack. (3) Close the lid firmly by turning the knob.



The switch on the battery pack

This switch is provided to help you remember the charging status of the battery. Set the switch to the "green mark" position after charging. (When detached from the AC power adaptor, the switch exposes the green mark. When detached from your camcorder, no mark is indicated.)

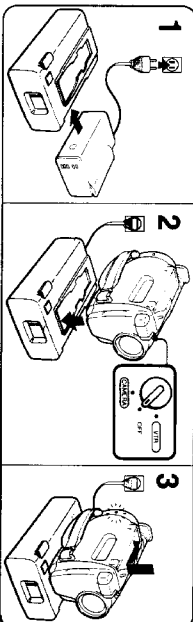


Charging in the Camcorder

Make sure that the battery pack is inserted into your camcorder. (p. 8)

(1) Connect the AC power adaptor to a wall outlet. (2) Set the POWER switch to OFF. (3) Fit the camcorder to the Handycam Station.

The charge lamp on the camcorder lights and charging begins. When charging is completed, the charge lamp on the camcorder goes out. For charging time and battery life, refer to the table below. While charging, the camcorder may heat up. This is not cause for concern.



You can also charge by connecting the camcorder and the AC power adaptor using the supplied connecting cord (p. 24).

Charging time and battery life

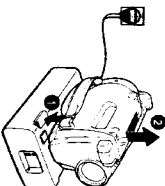
Charging time*	Battery life**
5 hours 30 minutes	50 minutes

* Approximate charging time to charge an empty battery pack using the AC-V500 (Lower temperatures require a longer charging time.)

** Approximate continuous recording time indoors

Removing the Camcorder

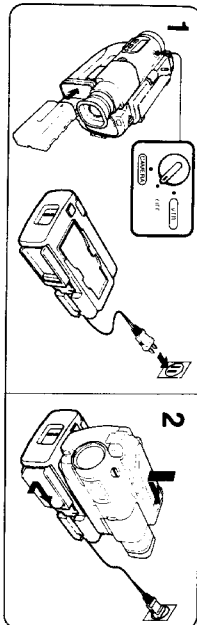
(1) Press HANDYCAM RELEASE. The camcorder will unlock. (2) Slide and lift up the camcorder.



Charging and Installing the NP-500 Battery Pack

Charge Two Battery Packs Consecutively

(1) Insert one battery pack into the camcorder (p. 8). Set the **POWER** switch to **OFF**. Connect the AC power adaptor to a wall outlet. (2) Fit the camcorder to the Handycam Station. Attach another battery pack to the AC. The battery pack attached to the AC power adaptor is charged first. Then the battery pack inside the camcorder is charged. When charging is completed, the charge lamp on the camcorder goes out following the three **CHARGE** jumps on the AC power adaptor went out. For charging time and battery life, refer to the table below.



You can also charge by connecting the camcorder to the AC power adaptor using the supplied connecting cord (p. 24).

Changing time and battery life

Charging time*	Battery life**
8 hours	50 minutes each

* Approximate charging time to charge an empty battery pack using the AC-V500 (Lower temperatures require a longer charging time.)

** Approximate continuous recording time indoors

Tips for Using the NP-500 Battery Pack

Note on Charging

Recharge the battery pack whenever you like. You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. So recharge the battery pack before use.

Preparing the Battery Pack

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is measured by continuous camcorder recording time, at a room temperature using a fully-charged battery. The battery is also expended when:

- You insert or eject a tape.
- The camcorder is set to **Standby** mode.
- You set the **POWER** switch to **VTR**.

Battery life is shortened in a cold environment.

Battery efficiency is decreased and the battery wears out more quickly in cold weather, below 50 F (10 C).

To save battery power close the **STANDBY** cover when not recording.

A smooth recording can be made even if recording is stopped and started again. [a]

Battery Remaining Indicator

You can check the remaining battery capacity by looking at the  indicator in the viewfinder. The decreasing black bar indicates decreasing battery power.



When to Replace the Battery Pack

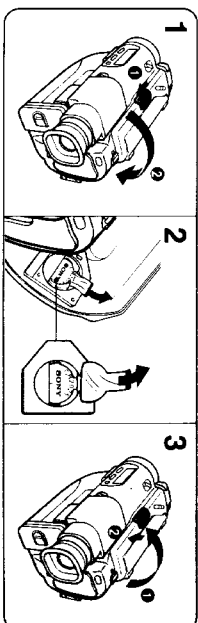
You can check the remaining battery capacity by looking at the battery life indicator in the viewfinder. When the **CC** indicator and the battery lamp in the viewfinder change from slow to rapid flashing, replace the battery pack. Set the **POWER** switch to **OFF**, and replace the battery pack. Leave the tape in the camcorder in order to obtain a smooth transition when you begin recording again. [b]



Setting the Date and Time

Installing the Lithium Battery

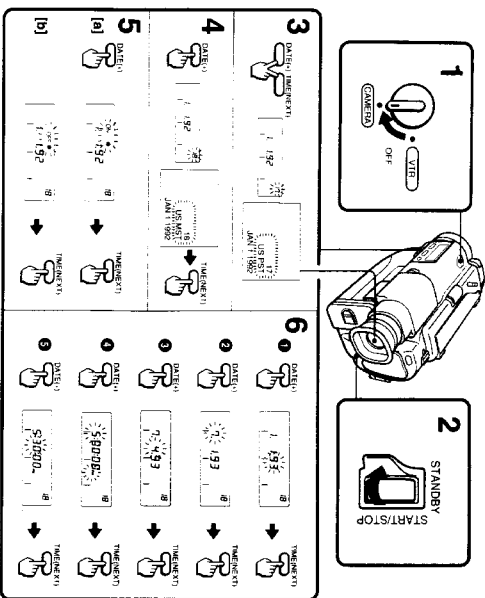
To activate the clock and the world clock, you must first install a lithium battery. (1) Slide the cover lock and open the cassette compartment cover. (2) Pull out the film in the battery compartment. (3) Close the cover and press the top, the cover to lock it.



Setting the Date and Time

Setting the Date and Time

Before setting the clock, make sure a power source and lithium battery are installed. (1) Set the POWER switch to CHARGE. (2) Open the cover. (3) Press DATE (+) and TIME (NEXT) simultaneously until the area name and the year flash in the viewfinder. (4) Press the home arrow. (5) Set the time. (a) For Daylight Savings Time, press DATE (+) then press TIME (NEXT). (b) For Standard Time, press DATE (+) then press TIME (NEXT). (6) Adjust the flashing digits for the year, month, day and hour by pressing DATE (+) and TIME (-) pressed. The digits advance faster.



Time Zones and Area Numbers and Names

S.T. in the following table stands for Standard Time.

Time Zones	Area Number and Name
Hawaii S.T.	15 HAWAII
Alaska S.T.	16 ANCHORAGE
Pacific S.T./West Canada	17 US PST
Mountain S.T.	18 US MST
Central S.T.	19 US CST
Eastern S.T./East Canada	20 US EST

To Correct the Date and Time Setting

Repeat steps 3 to 6.

To Check the Preset Date and Time

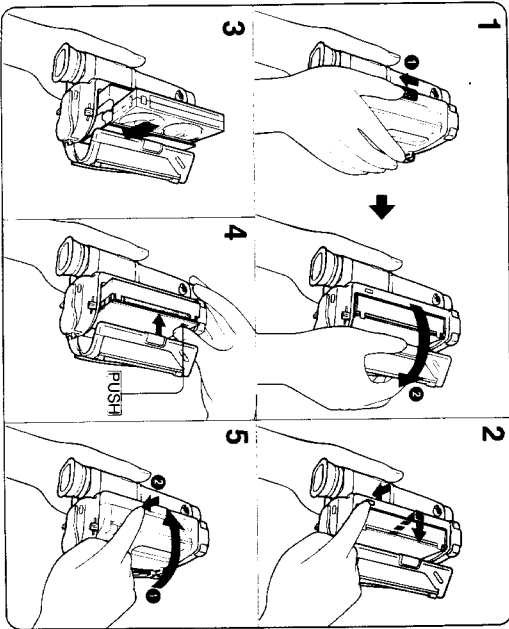
Press DATE (+) to display the date indicator in the viewfinder and the display window. Press TIME (NEXT) to display the time indicator. When you press the same button again, the indicator goes out.

To Reset to Standard Time

Change the D.S.T. mode setting in the menu system (p. 32).

Inserting a Cassette

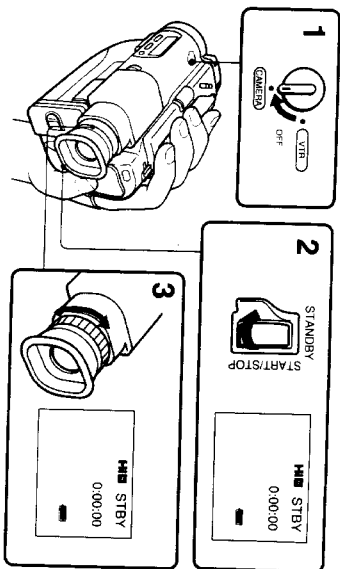
Make sure that a power source is installed. (1) Slide the cover lock and open the cassette compartment cover. (2) Press EJECT. The cassette compartment automatically lifts up and opens. (3) Insert a cassette (if supplied) with the window facing out. (4) Press the D.S.T. mark on the cassette compartment to close it. (5) Close the cover and press EJECT. To eject the cassette, press EJECT.



Setting the Date and Time/Inserting a Cassette

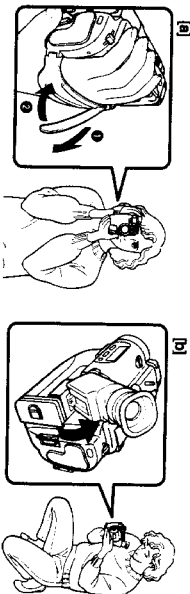
Adjusting the Viewfinder Lens

Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is connected to the camcorder.
(1) Set the POWER switch to CAMERA. (2) Open the STANDBY cover. (3) Turn the viewfinder lens adjustment ring so that the "STBY" indicator in the viewfinder comes into sharp focus.



Hints for Better Shooting

For hand-held shots, you'll get better results holding the camcorder according to the following suggestions:



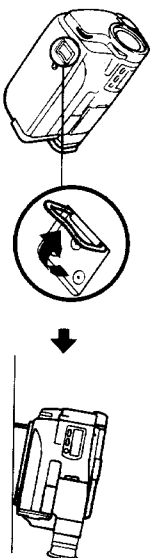
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. [a]
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyepiece.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle.
- Turn the viewfinder up for recording from a low position. [b]

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 46). Make sure the tripod screw is shorter than 6.5mm (9/32 in).

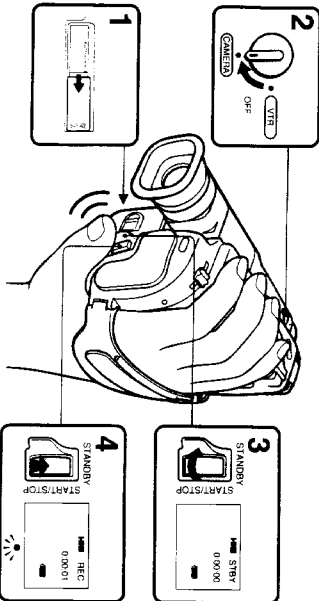
Use the instant stand

Lift up the stand at the bottom of the camcorder. Do not attach a shoulder strap to the stand.



Basic Operation

make sure that a POWER source is installed and a cassette is inserted. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly. (1) Close the AUTO LOCK cover for automatic adjustment (p.25). (2) Set the POWER switch to CAMEDIA. (3) Open the STANDBY cover. (4) Press START/STOP. The camcorder starts recording and the "REC" indicator will appear in the viewfinder.



To Stop Recording Momentarily

Press **SLASH/STOP** again. The "STBY" indicator appears in the viewfinder (standby mode)

To Finish Recording

Close the **STANDBY** cover and set the **POWER** switch to **OFF**. Then, eject the tape (p. 13).

Note on standby mode

If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, close the **STANDBY** cover once and open it again. To start recording, press **START/STOP**.

Note on recording

When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape. You can record tapes in SP (standard play) mode only.

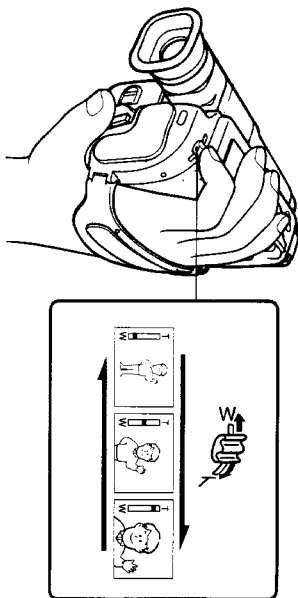
Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press **RESET** located below the display window.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use the zoom to focus manually or to decide on a shooting angle before you start recording. For more professional-looking recordings, use the zoom sparingly.

- 1 side: for telephone (subject appears closer)
- 1 side: for wide-angle (subject appears farther away)



Zooming Speed

Slide the power zoom lever firmly for a high-speed zoom. Slide it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

You can shoot a subject that is at least 50 cm (about 3 feet) away from the lens surface in the telephoto position, or 10 cm (about 1/2 inches) in the wide-angle position.

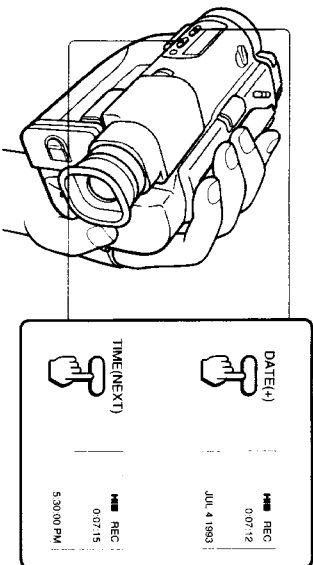
Manual focusing in macro

You can also shoot with manual focus while doing close-ups (p.26)

Camera Recording

Recording the Date or Time

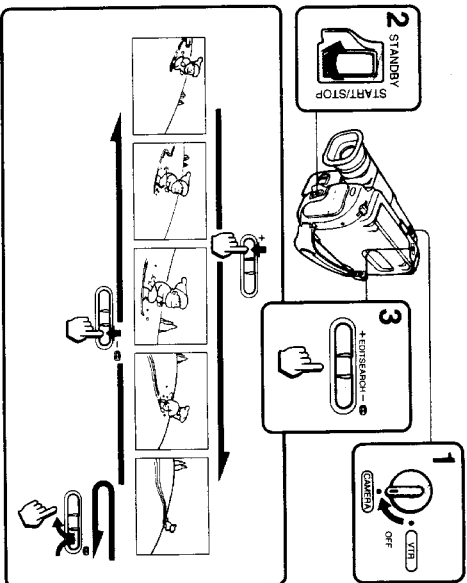
In CAMERA mode, press DATE (+) or TIME (NEXT). You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.



To Stop Recording with the Date or Time
Press DATE (+) or TIME (NEXT) again. Recording continues.

Checking the Recorded Picture in the Viewfinder

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder. (1) Set the POWER switch to CAMERA. (2) Open the STANDBY cover. (3) Press EDITSEARCH. Press the - (REVIEW) side momentarily, the last few seconds of the recorded portion plays back. (Rec Review). Keep pressing EDITSEARCH to play back the last recorded portion. (Edit Search).
+ side to view the forward playback picture
- side to view the reverse playback picture



Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

Connect headphones (not supplied) to the PHONES jack. Play back the tape in VTR mode (p.22).

To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

Connection for Playback

You can use this camcorder as a VCR by connecting it to your TV for playback. There are four ways to connect your camcorder.

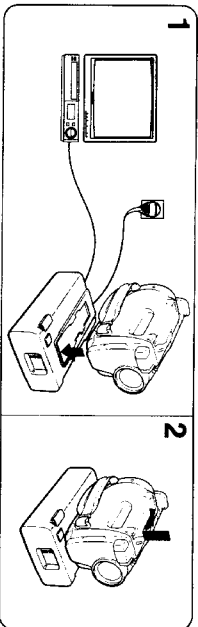
- Connecting to a TV or VCR using the Handycam Station (p.20)
- Connecting to a TV with Video/Audio input jacks or a VCR (p.21)
- Connecting to a TV without Video/Audio input jacks (p.21)

Connecting to a TV or VCR using the Handycam Station

After you've connected the supplied HSA-5000 Handycam Station, you can view the playback picture on a TV easily.

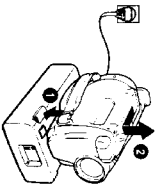
To Fit the Camcorder to the Handycam Station

For details of the connection, see the instruction manual for the Handycam Station. (1) Place the camcorder into the Handycam Station. (2) Slide the camcorder along the guides to fit it in.



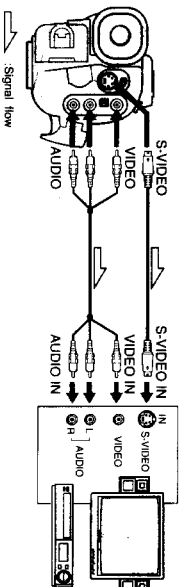
To Remove the Camcorder

Press HADYCAM RELEASE on the Handycam Station. Slide and lift up the camcorder.



Connecting to a TV with Video/Audio Input Jacks or a VCR

Connect the camcorder to your TV by using the supplied connecting cable. Set the TV/VCR selector to VCR on the TV. When Connecting the camcorder to VCR, set the input selector on the VCR to LINE.

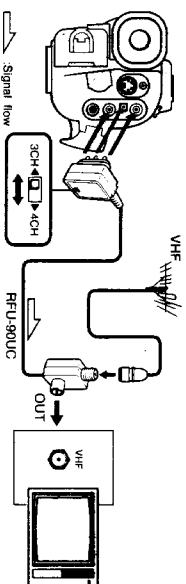


If your TV or VCR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is in monaural.

If you are going to connect the camcorder using the S video cable, you do not need to connect the yellow (video) plug or the AV connecting cable.

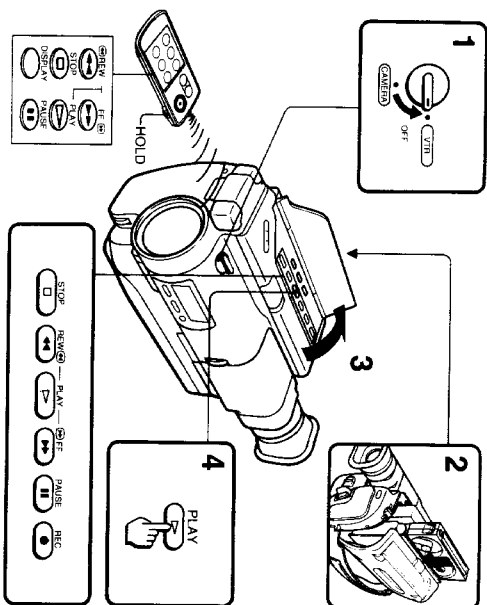
Connecting to a TV without Video/Audio Input Jacks

Connect the camcorder to the TV using the supplied RFU adaptor. Set the channel selector on the RFU adaptor and your TV channel to VHF channel CH 3 or CH 4, whichever is not active in your area. With this connection, the sound is in monaural.



Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VCR (p. 18). You can control playback using the supplied Remote Commander (p. 48). Before using the Commander, slide the HOLD switch in the direction opposite the arrow (1). Set the F/COVER switch to VTR (2). Insert the recorded tape with the window facing out (3). Open the lid to the control panel (4). Press $\blacktriangle$. Playback starts.



To stop playback, press $\square$.

To rewind the tape, press $\blacktriangleleft$.

To advance the tape rapidly, press $\blacktriangleright$.

Various Playback Modes

To view a still picture (playback pause)

Press II during playback. To resume playback, press $\blacktriangle$ or $\blacktriangleright$.

To locate a scene (picture search)

Keep pressing $\blacktriangleleft$ or $\blacktriangleright$ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (skip scan)

Keep pressing $\blacktriangleleft$ while rewinding or $\blacktriangleright$ while advancing the tape. To resume normal playback, press $\blacktriangle$.

To view the picture in a sequence of stop-motion images

Press EDIT/SEARCH in playback-pause mode. If you keep pressing EDIT/SEARCH, you can view the picture playback in the forward (+) or reverse (-) direction.

Notes on playback

- Streaks appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.

To select the monitor sound

Change the "Hi-Fi SOUND" mode setting in the menu system (p. 32).

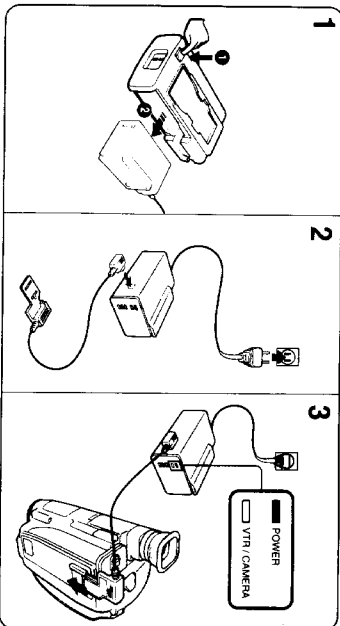
To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander.

To erase the indicators, press DISPLAY again.

Using House Current

You can use alternative power sources: house current and the NP-500 battery pack. This section describes using house current. Use the supplied AC-V500 AC power adaptor. (1) Remove the AC power adaptor from the Handycam Station. Press ADAPTOR RELEASE and pull out the AC power adaptor. (2) Connect the power cord to a wall outlet, and connect the supplied connecting cord to the DC OUT jack on the AC power adaptor. (3) Insert the connecting plate into the guides at the bottom of the camcorder. The orange VTR/CAMERA lamp lights while the camcorder is operating.



Note on the instant stand

Do not use the instant stand (p. 15) when you connect the connecting cord to the camcorder. The camcorder will tumble down.

Caution

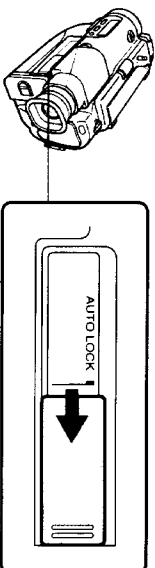
To prevent accident from a short circuit, do not come into contact with the terminal inside the shutter at the bottom of the camcorder.

Selecting Automatic or Manual Adjustment Modes

The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for creative recording.

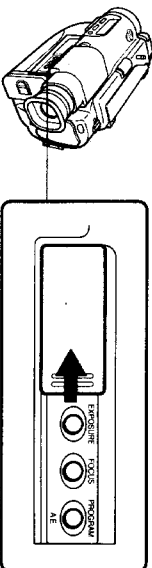
Automatic Adjustment Mode

Close the AUTO LOCK cover. In AUTO LOCK mode, the camcorder adjusts the focus and exposure automatically. It also sets the shutter speed to 1/60.



Manual Adjustment Mode

Open the AUTO LOCK cover. In manual mode, you can adjust the focus and the exposure manually, and select from three PROGRAM AE modes to fit the shooting situation. Even if in manual mode, the settings you didn't adjust manually remain the same as when in automatic adjustment mode.



About the previous settings

Manual settings are saved in the following case:

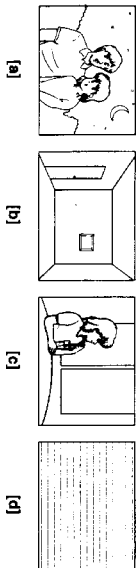
- When you resume automatic mode after you make manual adjustments and then select manual mode again.
 - When you set the POWER switch to OFF.
- However, manual settings are cancelled if more than 5 minutes pass after you have detached the battery.

Focusing Manually

When to Use Manual Focus

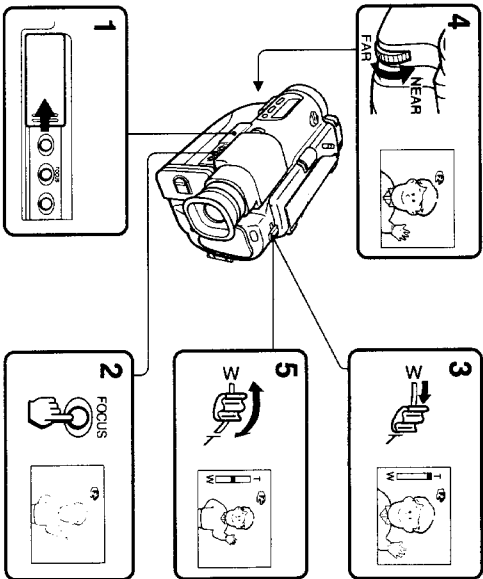
Use manual focus under the following conditions:

- Insufficient light (a)
- Subjects with little contrast – walls, sky, etc. (b)
- Too much brightness behind the subject (c)
- Horizontal stripes (d)
- Subjects through frosted glass
- Subjects beyond iris, etc. reflecting light
- Shooting a stationary subject when using a tripod



Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length. (1) Open the AUTO LOCK cover. (2) Press FOCUS. The ∞ indicator appears in the viewfinder. (3) Set the desired shot length to the T side until the zooming stops. (4) Turn the focus dial to adjust the focus. (5) Set the desired shot length.



To Reactivate Auto Focusing

Press FOCUS again, or close the AUTO LOCK cover. The ∞ indicator in the viewfinder disappears.

Shooting in relatively dark places

Shoot at wide angles after focusing in telephoto.

Note on the focus dial

The focus dial does not have a stop position.

Adjusting the Exposure

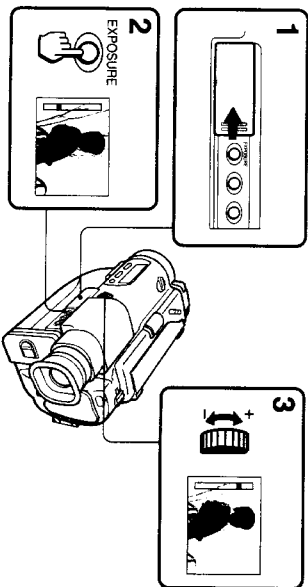
When to Adjust the Exposure

Adjust the exposure manually under the following cases.

Conditions	Turn the Exposure dial.
The background is too bright (back lighting)	Turn the Exposure dial to the right (+) to record the brightness faithfully.
Insufficient light, most of the picture is dark.	Turn the Exposure dial to the left (-) to record the brightness faithfully.
Bright subject and dark background	Turn the Exposure dial to the right (+) to record the brightness faithfully.
To record the darkness faithfully	Turn the Exposure dial to the left (-) to record the brightness faithfully.

Adjusting the Exposure

(1) Open the AUTO LOCK cover. (2) Press EXPOSURE. The exposure indicator appears in the viewfinder and the exposure is locked at the actual brightness. (3) Turn the EXPOSURE dial to adjust exposure. The exposure is locked at the adjusted brightness.



To Return to Automatic Exposure Mode

Press EXPOSURE again, or close the AUTO LOCK cover.

Shoot with the sun behind you

When the light source is behind your subject, or in the following situations, the subject will be recorded too dark.

- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shoot in the dark

We recommend you to use the video light (not supplied). To get the best color, you must maintain a sufficient light level.

Using the PROGRAM AE Function

You can select from three PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a P effect (the subject is in focus and the background is out of focus) or capture high-speed action with Sports mode or High-Speed Shutter mode.

Selecting the Best Mode

Select the best mode by using the following examples.



Portrait mode

- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming in on a subject in telephoto

Sports mode

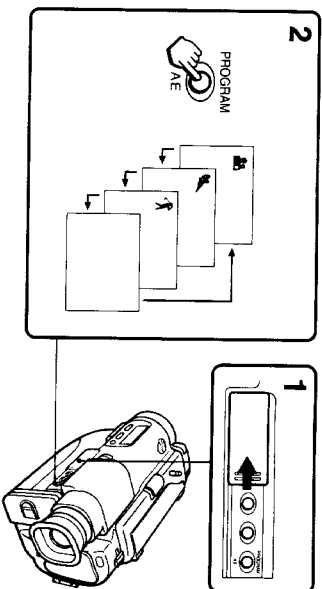
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape in a moving car

High-speed shutter mode

- Fast swing in a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in clear, sharp picture

Using the PROGRAM AE Function

(1) Open the AUTO LOCK cover. (2) Press PROGRAM AE repeatedly so that the desired mode indicator appears inside the viewfinder.

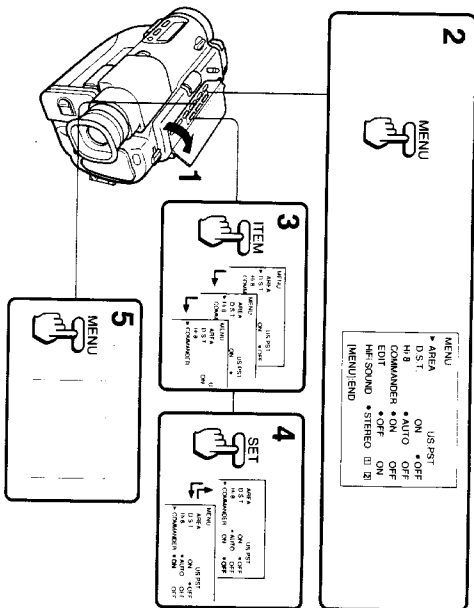


Note on shutter speed

The shutter speed in each PROGRAM AE mode is as follows.
 Portrait mode – between 1/60 to 1/2000
 Sports mode – between 1/60 to 1/500
 High-speed shutter mode – 1/4000

Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions.
 (1) Open the lid of the control panel. (2) Press MENU to display the menu in the viewfinder. (3) Press ITEM to move the cursor ► and select the desired item. (4) Press SET to move the cursor ◀ and set the desired mode. If you want to change the other modes, repeat steps 3 and 4. (5) Press MENU to erase the menu display.



Selecting the Mode Setting of Each Item

AREA

- You cannot select this item before setting the date and time (p.11).
- Select the area name of the time zone where you will use the camcorder when you use the world clock (p.35).

D.S.T. <ON/OFF>

- You cannot select this item before setting the date and time (p.11).
- Select ON to set the clock to Daylight Savings Time.
- Select OFF to set to standard time.

H.8 <AUTO/OFF>

- Select AUTO to have the camcorder automatically set the recording mode (H.8 or standard 8 mm) depending upon cassette type being used.
- Select OFF to record a H.8 tape in standard 8 mm format. See page 38 for details about cassette types.

COMMANDER <ON/OFF>

- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander for the camcorder.

EDIT <ON/OFF>

- In CAMERA mode, this option is not displayed.
- Select ON to minimize the picture and sound deteriorations when editing.
- Select OFF otherwise.

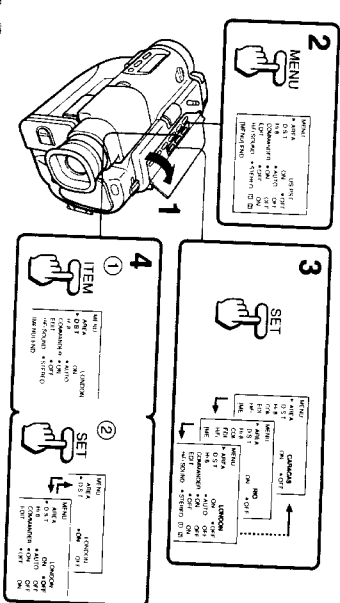
HIFI SOUND <STEREO/1/1/2/3>

- In CAMERA mode, this option is not displayed.
- Normally select STEREO.
- Select [1] or [2] to play back a dual soundtrack tape.

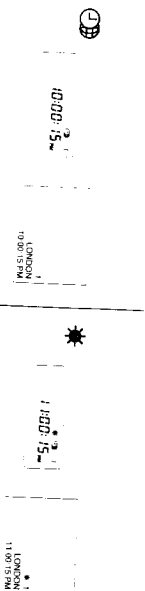
Changing the Mode Settings

Using the World Clock

Before using the world clock, you need to set the date and time in your home area (p. 11). Reset the clock according to the local time zone by setting AREA and D.S.T. Presses in the menu system. First find the area name in the "Time zone chart" on page 35. (1) Open the lid to the menu system. (2) Press MENU to display the menu. (3) Press SET to select the area name where you will use the recorder. (4) Press ITEM to select D.S.T. item. Press SET to select ON for Daylight Savings Time or OFF for standard time.



The D.S.T. indicator appears in the display window and the area name appears in the viewfinder when using the world clock. The * indicator appears in the display window and the viewfinder when setting to Daylight Savings Time.



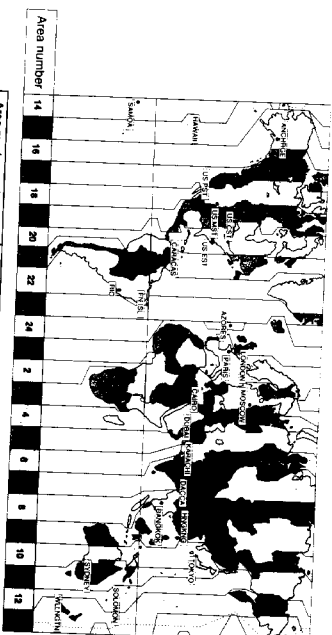
To Check the Date

Press DATE (+) To turn of the date indicator, press DATE (+) again.

To Reset to Your Home Area Time

Reset the AREA mode in the menu system to your home area name.

Time Zone Chart



Area number and name	Nations or areas*
1 LONDON	England, GMT (Greenwich Mean Time), Portugal
2 PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland
3 CAIRO	Egypt, Greece, Israel, Turkey
4 MOSCOW	Iran, Kenya, Saudi Arabia, former U.S.S.R. (west)
5 DUBAI	United Arab Emirates
6 KARACHI	Maldives, Pakistan
7 DACCA	Bangladesh, India, Myanmar
8 BANGKOK	Cambridge, Indonesia (Jakarta), Thailand, Vietnam
9 HONGKONG	Australia (west), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan
10 TOKYO	Japan, Korea
11 SYDNEY	Australia (east), Guam, Saipan
12 SOLOMON	New Caledonia
13 WELLINGTON	Fiji, New Zealand
14 SAMOA	Western Samoa
15 HAWAII	HST (Hawaii standard time), Tahiti
16 ANCHORAGE	AST (Alaska standard time)
17 US PST	PST (Pacific standard time)
18 US MST	MST (Mountain standard time)
19 US CST	CST (Central standard time), Mexico
20 US EST	EST (East standard time), Peru
21 CARACAS	Chile, Venezuela
22 RIO	Argentina, Brazil
23 FN ISL.	Fernando de Noronha
24 AZORES	Azores Islands

* These are common names. They may be different from formal country names.

Additional Information

Usable Cassettes and Recording/Playback Modes

Selecting Cassette Types

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures. You can use Hi8 video and standard 8 mm cassettes. When you want to record in the Hi8 system, use only Hi8 video cassettes. You cannot record on 8 mm cassettes in the Hi8 system.

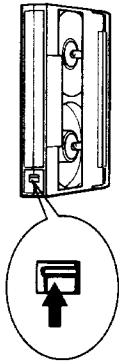
If you are going to play back the tape using a standard 8 mm video recorder/player, you should record the tape in standard 8 mm system.

If you want to record in Hi8 system, set the Hi8 mode to ON in the menu system before recording (p.32).

To play back in	Record using cassette type	Set Hi8 setting to
Hi8	Hi8	AUTO
Standard 8	Hi8	OFF
	8	AUTO (or OFF)

To Prevent Accidental Erasure

Slide the tab on the cassette to expose the red mark.



If you try to record with the red mark exposed, the and indicators flash in the viewfinder, and you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.

When You Play Back

The playback mode is selected automatically according to the recording system (Hi8/standard 8 mm, SP/LP mode) in which the tape was recorded.

Notes on AFM Hi-Fi stereo

When you play back the tape, the sound is in monaural if:

- You record the tape using this camcorder, then play it back on an AFM Hi-Fi monaural video recorder/player.
- You record the tape on an AFM Hi-Fi monaural video recorder, then play it back on this camcorder.

LP (long play) mode

When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder. This camcorder cannot record tape in LP mode.

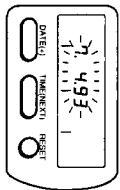
Changing the Lithium Batteries

Lithium Battery Life

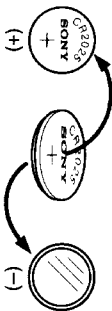
The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the date or time indicator keeps flashing in the display window and D indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAM/ERA.

The lithium battery for the Remote Commander lasts about 6 months under normal operation. When the battery becomes weak or dead, the Commander does not work.

In either cases, replace the battery with the Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.



Note that the lithium battery has a positive (+) and a negative (-) terminal as illustrated. Be sure to install the battery in the battery compartment so that terminals on the battery match the terminals on the camcorder or the Remote Commander.

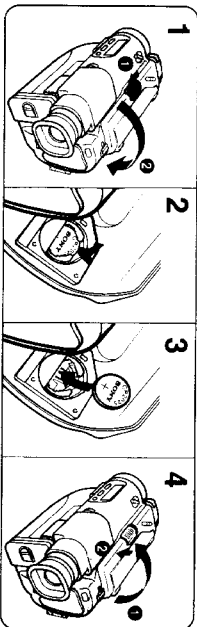


Changing the Lithium Batteries

Changing the Lithium Battery in the Camcorder

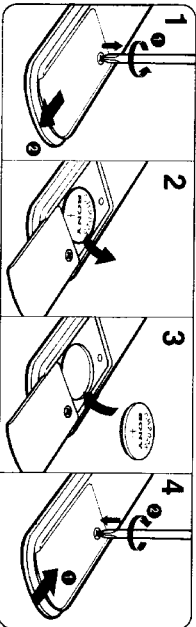
While replacing the battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date and time.

(1) Unlatch the grip belt (p. 15). (2) Open the cassette compartment cover. (3) Push the battery down once and pull it out to remove it from the lithium battery holder inside the cover. (4) Install a new battery with the positive (+) terminal facing up. (5) Close the cassette compartment.



Changing the Lithium Battery in the Remote Commander

(1) Unlatch the screw at the back of the Commander and open the lithium battery holder. (2) Remove the lithium battery. (3) Insert a new battery with the positive (+) terminal facing up. (4) Close the holder. Fasten the screw.



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Cautions

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

Maintenance Information and Precautions

Moisture Condensation

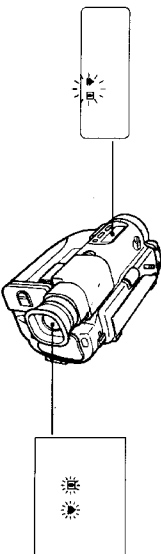
If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When the **B** and **A** indicators flash in the viewfinder and the display window, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.

Eject the tape, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.

If the **B** indicator does not light up when you turn on the power, you can use the camcorder again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert tape and press a tape transport button, the **A** indicator flashes in the viewfinder and the display window. If this happens, none of the functions except cassette ejection will work.

Eject the tape and let it sit for about 1 hour.

If the **A** indicator does not light up when you insert the tape and press a tape transport button, you can use the camcorder again.

On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

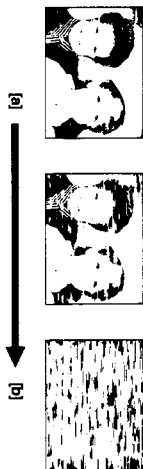
1 Be sure to tightly seal the plastic bag containing the camcorder.

2 Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

Maintenance Information and Precautions

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.



- [a] Slight contamination
 - [b] Critical contamination
- If this happens, clean the video heads with the Sony VB-25CJH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

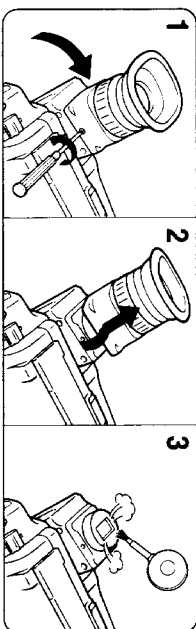
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the VB-25CJH cleaning cassette is not available in your area, consult your Sony service facility.

Removing Dust from Inside the Viewfinder

- (1) Turn the viewfinder up. Unfasten the screw at the side of the viewfinder using a precision screwdriver (not supplied).
- (2) Turn the viewfinder to the outside and pull it out.
- (3) Clean the surface of the screen with a commercially available blower.



To Reattach the Viewfinder

Push in the viewfinder until it clicks and fasten the screw.

Precautions

On Operation

- Operate the camcorder using 7.2 V (battery pack), or 6.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel.
- Do not operate the camcorder in the following cases:
 - Do not pick up the camcorder by the viewfinder. [a]
 - Avoid rough handling or mechanical shock. Be particularly careful of the lens.
 - Keep the POWER switch set to OFF when not using the camera.
 - Do not wrap up the camcorder and operate it since heat may build up internally.
 - Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [b]
- Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. [c]



On Handling Tapes

- Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in.

On Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Do not clean camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Using Your Camcorder Abroad

Each country has its own electricity and TV color systems. Before using your camcorder abroad, check the following points:

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz. If you cannot attach the power adaptor to the wall outlet, use a power cord plug adaptor (not supplied).

Difference in Color Systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV or a PAL-M system based TV with NTSC/PAL-M transcoder. Check the following alphabetical list:

NTSC system countries

Bahamas Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries

Australia, Austria, Belgium, China, Denmark, Finland, Germany (former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL M system country

Brazil

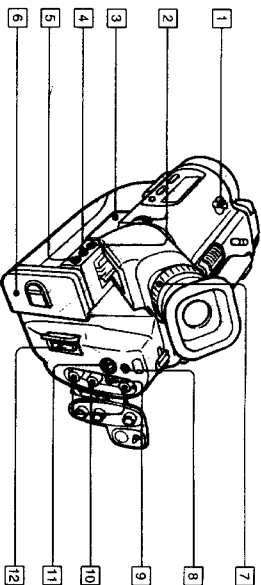
PAL N system countries

Argentina, Paraguay, Uruguay

SECAM system countries

Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Identifying the Parts



- 1 **POWER switch** (p. 16, 22)
CAMERA for camera recording, VCR for playing back or editing tape OFF.

- 2 **EXPOSURE button and EXPOSURE dial** (p. 29)
Press EXPOSURE to lock the exposure at the actual brightness. To adjust the exposure EXPOSURE, press this button and turn the EXPOSURE dial (p. 29).
Upward: to get the exposure brighter
Downward: to get the exposure darker

- 3 **AUTO LOCK cover** (p. 16, 25)
When you close it (set to AUTO LOCK), the camcorder will automatically lock exposure automatically, and sets the shutter speed at 1/60 seconds.
When you open it, you can adjust the focus and exposure manually. You can also use the PROGRAM AE function.
- 4 **FOCUS button** (p. 27)
Press it to set the camcorder in manual focus mode.

- 5 **PROGRAM AE button** (p. 31)
Press to select from three PROGRAM AE modes (Program, Shutter, and Shutter Speed Shutter mode) to fit the shooting situation.
- 6 **Battery compartment** (p. 8)
Insert the supplied Battery Pack NP-500 here.
- 7 **Viewfinder lens adjustment ring** (p. 14)
To focus the viewfinder, turn this ring until the indicator in the viewfinder comes into sharp focus.

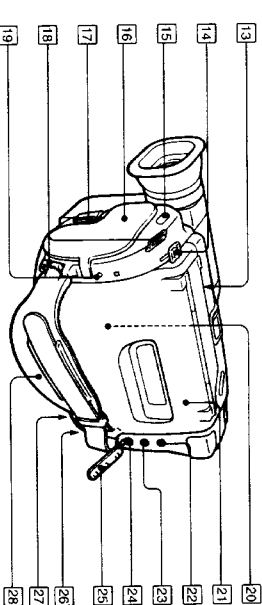
- 8 **REMOTE (L/R) control jack**
Connect the LANC (L) connecting cable to a wired remote control, and the R (R) connecting cable to this case, set the REMOTE COMMANDER mode to OFF in the menu system (p. 32).

- 9 **RFU DC OUT (RFU adaptor DC output)**
To view the recorded picture on the TV that has only an antenna input, connect the RFU adaptor here.

- 10 **VIDEO/AUDIO jacks** (p. 21, 37)
These jacks work as both input and output jack. In recording mode, they work as input jacks. They work as output jacks automatically. To view the recorded picture on the TV or to rerecord onto another tape, connect these jacks and the VIDEO/AUDIO input jacks on the TV or VCR using the AV connecting cable (supplied).
To view the recorded picture on the TV or VCR, connect the VIDEO/AUDIO output jacks on the TV or VCR.

- 11 **S VIDEO jack (4-pin mini-DIN connector)** (p. 21, 37)
You can get a clearer picture if your TV or VCR has an S video input. Connect the S video cable (supplied) using the S video connecting cable (supplied). This jack works as both input and output jacks. In recording mode, it works as output jack. To view the recorded picture on the TV or to rerecord onto another tape, connect this jack and the S video input jacks on the TV or VCR using the S video cable (supplied).
To record from a TV or VCR, connect this jack and the S video output jack on the TV or VCR.

- 12 **START/STOP button** (p. 16)
To start recording, press it after setting the CAMCORDER switch to CAMERA and opening the CAMCORDER cover.
To stop recording momentarily, press it again.



13 EJECT button (below the cover) (p. 13)
Press it to insert a cassette into the cassette compartment or to eject the cassette.

14 POWER ZOOM lever (p. 17)
Slide to change the size of the subject in the scene. For telephoto (subject appears closer) or wide-angle (subject appears farther away).

15 Rear remote sensor (p. 49)
Aim the Remote Commander here for remote control.

16 Jack cover
17 STANDBY cover (p. 16)
To set the camcorder to CAMERA Standby mode (recording standby mode), open it. To stop recording or to prevent from accidentally recording and wearing down the battery, close it.

18 Hook for shoulder strap (p. 49)
19 Changing lamp (p. 9)
This orange lamp lights up when the battery pack is changing in the camcorder.

20 Lithium battery compartment (inside the cover) (p. 11, 40)
Insert a lithium battery here with to activate the clock.

21 Cassette compartment cover (p. 11, 13, 40)
When you insert or feed a cassette, open the whole of this cover with sliding the cover lock.

22 MIC DC OUT jack
This jack supplies power to an external microphone (not supplied).

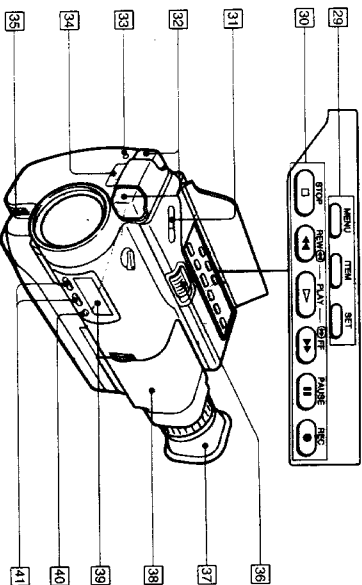
23 MIC jack
Connect an optional external microphone (stereo or monaural). This jack also accepts a "plug-in-power" microphone. If the microphone has two plugs, connect the DC IN plug to the MIC DC OUT jack on the camcorder.

24 PHONE/headphones jack (stereo) (p. 19)
Connect headphones (not supplied) to monitor the sound while viewing the playback or the recording picture.

25 Jack cover
26 Instant stand (p. 15, 24)
Lift up it to use as a handy camcorder stand.

27 Tripod receptacle (p. 15)
Attach a tripod (not supplied) here. When attaching a non-SONY tripod, make sure that the length of the camera mounting screw is shorter than 6.5 mm (9/32 inches). Otherwise, the screw might damage the inner part of the camcorder.

28 Grip strap (p. 15)
Put your hand through the grip strap to hold the camcorder. Adjust the length of the strap so that your thumb can easily touch START/STOP.



29 Menu operation buttons (p. 32, 34)
MENU: Press to display the menu in the MENU. Preview: Press to select the desired item. ITEM: Press to select the mode of the selected item.

30 Tape transport buttons (p. 22)
STOP: Press to stop the tape.
REW: Press to rewind the tape.
F.FAST: Press to fast forward the tape.
PAUSE: Press to pause the tape.
REC: Press to start recording.
These buttons will function in VTR mode.

31 EDI/SACH button (p. 19, 36)
Press it to check the recorded scene in the viewfinder in CAMERA standby mode, + side: to view the forward playback picture - side: to view the reverse playback picture.

32 Built-in microphone (stereo)
33 Camera recording / battery lamp (p. 16, 53)
This red lamp lights up during camera recording. When it flashes, the battery is dead.

34 Front remote sensor (p. 49)
Aim the Remote Commander here for remote control.

35 Focus dial (p. 27)
Turn it to adjust the focus manually and to achieve a sharp focus in manual focus mode.

36 Eyecup (p. 15)
To achieve better camera recording, place your eye firmly against it.

37 Viewfinder (p. 14, 53, 54)
You can monitor the monochrome picture being recorded or played back. For details on the indicators in the viewfinder, see page 54.

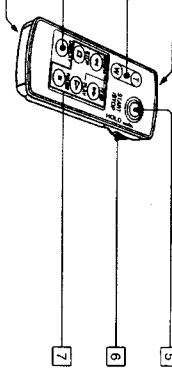
38 Display window (p. 53, 54)
Displays operating information such as the clock or the tape counter.

39 RESET button (p. 16)
Press to reset the tape counter to zero.

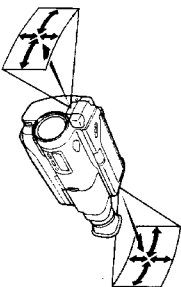
40 DATE/ and TIME/NEXT buttons (p. 12, 18)
Press to set the clock or to display or turn off the date and time in the viewfinder. When setting the date and time, press DATE/+ button to advance numbers and press TIME/NEXT button to set the next factor.

Identifying the Parts

Wireless Remote Commander

- 
- 1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning the POWER switch on the camcorder.
 - 2 **Power zoom button**
 - 3 **DISPLAY button**
Press to display the viewfinder screen indicators on the TV when you connect the camcorder to a TV.
To erase the indicators, press again.
 - 4 **Lithium battery holder (6-40)**
 - 5 **START/STOP button**
 - 6 **HOLD switch**
Slide in the direction of the arrow to prevent the camcorder from being automatically pressed before using this Remote Commander; slide in the direction opposite the arrow.
 - 7 **Tape transport buttons**

Remote Control Direction

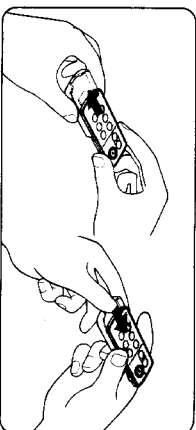
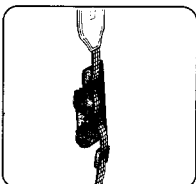


Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

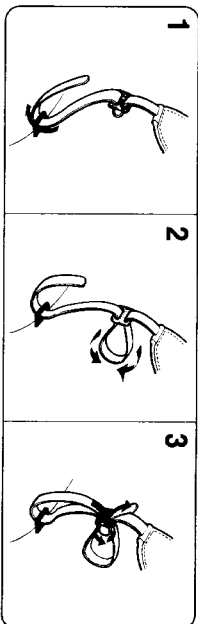
Using the Remote Commander holder

You can slide the Remote Commander holder onto the shoulder belt.



Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (6-46).



Identifying the Parts

Specifications

System

Video recording system	S video input/output
Four rotary heads, helical scanning	4-pin mini DIN
Audio recording system	Luminance signal: 1 Vp-p, 75 ohms, unbalanced; sync negative
Video signal	Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced;
Usable cassette	Phono jack, 1 Vp-p, 75 ohms, unbalanced; sync negative
8 mm video format cassette (H8 or standard 8 mm)	Phono jacks (2 stereo L and R) input: -7.5 dBs, input impedance more than 47 kilohms
SP mode: Approx. 1.43 cm (19/32 inches)/sec	Output: -7.5 dBs, (at load impedance 47 kilohms)
LP mode: Approx. 0.72 cm (5/16 inches)/sec (playback only)	Impedance less than 2.2 kilohms selectable according to the operation.
Recording time	RFU DC OUT
SP mode: 2 hours (E6/P6, 120)	Special mini-jack, DC 5 V
Playback time: SP mode: 2 hours (E6/P6, 120)	Headphones jack
Fastforward/rewind time	Stereo mini-jack (0.3 5)
Approx. 8 min. (E6/P6-120)	Stereo mini-jack (0.2 5)
Image device	Stereo mini-jack, -66 dBs low impedance with 2.5 to 3 V DC output
Electronic viewfinder (monochrome)	MIC jack
Combined 8 x power zoom lens	Impedance 6.8 kilohms (0.3 5)
1.5-9 to 47.2 mm (1/4 to 1 7/8 inches) when converted into a 35-mm SLR camera	MIC DC OUT
F 1.4 to 2.2	Stereo mini-jack, DC 5 V
Filter diameter: 37 mm (1 1/2 inches)	Handycam Station terminal
TTL autofocus system inner focus wide macro system	20pin special connector

Color temperature

Auto

Minimum illumination

Illumination range

Recommended illumination

3 lx (f 1.4)
range to 100,000 lx
More than 100 lx

Input and output connectors

Video input/output	4-pin mini DIN
Luminance signal: 1 Vp-p, 75 ohms, unbalanced; sync negative	Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced;
Phono jack, 1 Vp-p, 75 ohms, unbalanced; sync negative	Phono jacks (2 stereo L and R) input: -7.5 dBs, input impedance more than 47 kilohms
Output: -7.5 dBs, (at load impedance 47 kilohms)	Impedance less than 2.2 kilohms selectable according to the operation.
RFU DC OUT	Special mini-jack, DC 5 V
Headphones jack	Stereo mini-jack (0.3 5)
Stereo mini-jack (0.2 5)	Stereo mini-jack, -66 dBs low impedance with 2.5 to 3 V DC output
MIC jack	Impedance 6.8 kilohms (0.3 5)
MIC DC OUT	Stereo mini-jack, DC 5 V
Handycam Station terminal	20pin special connector

General

Power requirements

7.2 V (battery pack)

6.3 V (AC power adaptor)

Power consumption

5.3 W (camera recording) including the viewfinder

Vertically, horizontally

Operating temperature

0 °C to 40 °C (32 °F to 104 °F)

Storage temperature

-20 °C to +60 °C (-4 °F to 140 °F)

Dimensions

Approx. 92x102x193 mm (w/h/d)

(3.98 x 4.02 x 7.64 inches)

Approx. 870 g (1 lb 15 oz) excluding the battery pack and shoulder strap, cassette, and shoulder strap

Approx. 870 g (1 lb 15 oz) including the battery pack NP-500, lithium battery CR12025, cassette EF-60, and shoulder strap

Microphone

Electret condenser microphone, stereo type

Supplied accessories

See page 5

Trouble Check

If you run into any problems using the camcorder, use the following table to troubleshoot the problem.

Symptom	Cause	Corrective Actions	Page
The power does not go on.	The battery is not inserted. The battery is dead.	Insert the battery. Use a charged battery.	6 6
The power goes off.	The AC power adaptor is not connected to a wall outlet. While being operated in CAMERA mode, the camcorder has been in the pause mode for more than 5 minutes. The battery is dead.	Connect the adaptor to a wall outlet. Close the STANDBY cover at once and open it again. Use a charged battery.	24 16 6
The battery pack is quickly discharged.	The ambient temperature is too low. The battery pack has not been charged fully. The battery pack is completely dead, and cannot be recharged. The battery pack is stuck to the drum.	Change the battery pack again. Use another battery pack. Eject the tape. Reform the tape or use a new one.	10 6 13 22
START/STOP does not operate.	The tape has run out. The POWER switch is set to VTR. The tab on the cassette is out (red).	Set it to CAMERA. Use a new tape or slide the red tab. Use a charged battery or the AC power adaptor.	16 38 6, 24
The cassette cannot be removed from the compartment.	The battery is dead. Moisture condensation has occurred.	Remove the cassette and do not use the camcorder for at least an hour.	41
The tape does not move when the record button is pressed.	The POWER switch is set to CAMERA or OFF. The tape has run out.	Set it to VTR. Rewind the tape or use a new one.	22
The autofocus function does not work.	The AUTO LOCK cover is closed. Shooting conditions are not suitable for autofocus operation.	Close the AUTO LOCK cover to set the AUTO LOCK. Open the AUTO LOCK cover and press FOCUS to adjust the focus manually.	25 27

(Continued)

Specifications/Trouble Check

Design and specifications are subject to change without notice.

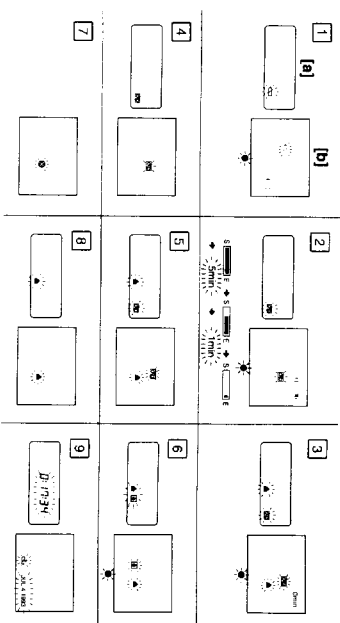
Trouble Check

Symptom	Cause	Corrective Actions	page
No sound or only a low sound is heard when playing back a tape.	The Stereo tape is played back with the HiFi SOUND mode set to 1 or 2.	Set to "STEREO" in the menu system.	30
The image on the viewfinder screen is not clear.	The viewfinder lens is not adjusted.	Adjust the viewfinder lens.	14
The menu is not displayed on the TV.	DISPLAY on the Remote Commander is not pressed.	Press DISPLAY on the Remote Commander.	48
A vertical band appears when a subject such as a landscape scene is shot against a dark background.	The contrast between the subject and background is too malfunctioning.	Change locations.	—
The playback picture is not clear.	EDIT mode is set to "ON".	Set EDIT mode to "OFF" in the menu system.	32
	The channel or input for the camcorder is not selected on the TV.	Select correctly.	21
	The video heads may be contaminated.	Clean the heads using the Sony V6 ESCHL cleaning cassette.	42
No picture and no sound is heard when using the Handycam Station.	The RFU adapters are not properly connected to the camcorder and the Handycam Station.	Disconnect the RFU adapter connected to the camcorder.	—
The supplied Remote Commander does not work.	The HOLD switch is working.	Set the switch in the direction opposite the arrow.	48
	RELOCATE COMMANDER mode is set to "OFF".	Set the mode to "ON" in the menu system.	32
	Something interrupts the infrared rays.	Take away the obstacle.	—
	The lithium battery is not inserted with the correct polarity.	Insert the lithium battery with the correct polarity.	39
	The lithium battery is dead.	Insert a new one.	39
There is dust inside the viewfinder.	—	Pull out the viewfinder and clean the viewfinder screen or viewfinder lens.	42
The lens chatters when you set the POWER switch to OFF and shake the camcorder.	This is not a malfunction.	—	—

Indicators in the Display Window and the Viewfinder

Warning Indicators

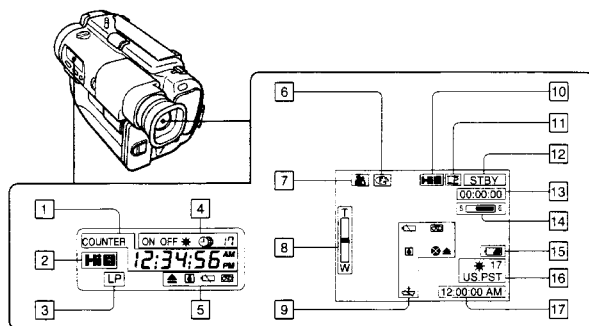
If indicators flash in the display window [a] or the viewfinder [b], or a caution lamp on the camcorder flashes, check the following.



- 1** Battery Remaining
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.
- 2** The tape is near the end.
- 3** The tape has run out.
- 4** No tape has been inserted.
- 5** The tab on the tape is out (red) (p. 38).
- 6** Moisture condensation has occurred (p. 41).
- 7** The video heads may be contaminated (p. 42).
- 8** Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.
- 9** The lithium battery is weak or the lithium battery is not installed (p. 39).

Trouble Check/Indicators in the Display Window and the Viewfinder

In the Display Window and the Viewfinder



- | | |
|---|--|
| 1 Tape counter, time or date indicator (p.12,16) | 10 Lights up while recording in Hi8 system (p.14,36) |
| 2 Playing back or recording in Hi8 format (p.38) | 11 Lights up when playing back a tape recorded in LP mode (p.38) |
| 3 Lights up when playing back a tape recorded in LP mode (p.38) | 12 Tape transport mode (p.16,22) |
| 4 World clock indicators (p.34) | 13 Tape counter (p.16) |
| 5 Warning indicators (p.53) | 14 Tape remaining indicator (p.53) |
| 6 Manual focusing (p.26) | 15 Battery remaining indicator (p.11) |
| 7 PROGRAM AE mode indicator (p.30) | 16 World clock indicators (p.34) |
| 8 Power zoom indicator (p.17) / Exposure indicator (p.28) | 17 Date or Time (p.18) |
| 9 Warning indicators (p.53) | |